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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/936,153	01/18/2002	Yasunari Ikeda	450118-02396	9213

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EXAMINER	
ODOM, CURTIS B	
ART UNIT	**PAPER NUMBER**
2611	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/936,153	IKEDA ET AL.	
	Examiner	Art Unit	
	Curtis B. Odom	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 March 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14,17 and 18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-6,14,17 and 18* is/are allowed.

6)☒ Claim(s) *7,8 and 10-13* is/are rejected.

7)☒ Claim(s) *9* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 3/15/2007 have been fully considered but they are not persuasive. The Applicant states (see pages 9, 10, and 12-14 of the Remarks) Seki et al. (U. S. Patent No. 5, 694, 389) fails to teach or suggest a "digital broadcast receiving apparatus for receiving a broadcast signal generated by combining a main signal...and sub signals comprising a transmission control signal modulated using a predetermined random sequence for reproducing said information source data contained in the received broadcast signal, the transmission control signal comprising control information (see claim 7)".

However, Seki et al. discloses an OFDM digital broadcast receiving apparatus (see column 1, lines 13-19, the apparatus shown in Fig. 18) for receiving a broadcast signal generated by multiplexing (see Fig. 17, block 207) main data signals which are encoded (Fig. 17, block 1301) and interleaved (Fig. 17, block 1302) using operation parameters set in accordance with the carrier frequency of the channel (see column 11, line 63-column 12, line 5) and null symbols/reference symbols (see Fig. 17, blocks 204 and 1305) representing sub symbols, wherein the reference symbol (sub symbol) is a transmission control symbol and is used to control the decoder and deinterleaver (as described in column 12, lines 22-36), the signal being modulated by a PN (pseudo-random) code by randomizing the phases of the carrier frequencies (see column 4, line 66-column 5, line 13, wherein the code is random as data is applied to carriers having random phases), wherein the receiver reproduces the main information data (see

Fig. 18). It is the understanding of the Examiner that randomizing the phases of the carrier frequencies is apart of the modulation process which improves the data transmission efficiency (see column 5, lines 14-15).

Regarding claim 12, (see pages 12-14 of the Remarks), it is the understanding of the Examiner that Seki et al. discloses (see above) "a digital broadcast receiving apparatus for receiving a broadcast signal generated by combining a main signal...and sub signals comprising a transmission control signal modulated using a predetermined random sequence for reproducing said information source data contained in the received broadcast signal, the transmission control signal comprising control information".

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 7, 8, 10, 11, and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Seki et al. (previously cited in Office Action 11/15/2006).

Regarding claim 7, Seki et al. discloses an OFDM digital broadcast receiving apparatus (see column 1, lines 13-19, the apparatus shown in Fig. 18) for receiving a broadcast signal generated by multiplexing (see Fig. 17, block 207) main data signals which are encoded (Fig. 17, block 1301) and interleaved (Fig. 17, block 1302) using operation parameters set in accordance

with the carrier frequency of the channel (see column 11, line 63-column 12, line 5) and null symbols/reference symbols (see Fig. 17, blocks 204 and 1305) representing sub symbols, wherein the reference symbol is a transmission control signal and is used to control the decoder and deinterleaver (as described in column 12, lines 22-36), the signal being modulated by a PN (pseudo-random) code on carrier frequencies (see column 4, line 66-column 5, line 13, wherein the code is random as data is applied to carriers having random phases), wherein the receiver reproduces the main information data (see Fig. 18), the receiver comprising:

a demultiplexing circuit (see Fig. 18, block 1405) for demultiplexing a main information data symbol from the reference symbols (as described in column 6, lines 37-40, and shown in Fig. 16, block 306);

a deinterleaving circuit (see Fig. 18, block 1406) for deinterleaving the demultiplexed main information signal using operation parameters set in accordance with the carrier frequency of the channel (see column 11, line 63-column 12, line 5), and

a decoding circuit (see Fig. 18, block 1407) for decoding the deinterleaved signal based on the transmission control signal (references symbol) as described in column 12, lines 22-36.

Regarding claim 8, Seki et al. discloses the operation parameters used for interleaving on a transmission side are set in accordance with the carrier frequency of the transmission channel (column 11, line 63-column 12, line 5), and a control circuit (Fig. 18, block 1404) for setting the operation parameters in the deinterleaving circuit in accordance with the carrier frequency (column 14, lines 29-36).

Regarding claim 10, Seki et al. discloses the broadcast signal is an OFDM signal (see column 12, lines 12-16).

Regarding claim 11, Seki et al. discloses the main information signal can be an audio signal (see column 1, lines 13-19), wherein the signal is encoded (see Fig. 18, block 1301).

Regarding claim 13, Seki et al. discloses a reference symbol multiplexed with the the main data signal (see Fig. 17, block 1305, column 5, lines 54-58), wherein the control circuit (Fig. 18, block 1404) controls the operation parameters of the decoding circuit (Fig. 19, block 1407) using the reference symbol (see column 12, lines 21-36) is reproduced using the PN sequences.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Seki et al. (previously cited in Office Action 11/15/2006) as applied to claim 7, in view of Alamouti et al. (previously cited in Office Action 11/15/2006).

Regarding claim 12, Seki et al. does not disclose pilot signals are contained in the sub-signals and used by a correction circuit for correcting a distortion in the main signal in accordance with a difference of the detected pilot signals.

However, Alamouti et al. discloses an OFDM transmitter (see Fig. 8) for transmitting audio signals (see column 23, lines 2-4) wherein the signals is modulated using a PN (pseudo-

random noise) code to produce an OFDM signal (see column 23, lines 33-58). Alamouti et al. discloses pilot tones included in the main OFDM signal tones (column 26, lines 16-23). Alamouti et al. further discloses transmitting a series of pilot tones (signals) of known amplitudes and phases to provide an accurate representation of the channel response based on the difference (distortion) of the received pilot tones (see column 32, lines 8-16). The channel distortion can be compensated by taking a complex inverse of the channel response and multiplying the incoming signals by the complex inverse calculation (see column 32, lines 16-20). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to include the transmission and processing of pilot signals in Seki et al. as disclosed by Alamouti et al. in order to compensate for phase and amplitude channel distortion (see Alamouti et al., column 32, lines 8-20).

Allowable Subject Matter

6. Claims 1-6, 14, 17, and 18 are allowable over prior art references.

7. Claim 9 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

8. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Curtis B. Odom whose telephone number is 571-272-3046. The examiner can normally be reached on Monday- Friday, 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Curtis Odom
June 11, 2007